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LO, SUZANNE	
ART UNIT	PAPER NUMBER
2128	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/666,209	Applicant(s) EVANS ET AL.	
	Examiner Suzanne Lo	Art Unit 2128	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 January 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) *15-18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14,19 and 20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-14 and 19-20 have been presented for examination.

Election/Restrictions

2. Applicant's election without traverse of claims 1-14 and 19-20 in the reply filed on 07/12/06 is acknowledged.

PRIORITY

3. Acknowledgment is made of applicant's claim for priority to provisional application 60/411,839 filed on 09/18/02.

Information Disclosure Statement

4. The information disclosure statements (IDS) submitted on 10/25/04, and 07/30/04 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the Examiner has considered the IDS' as to the merits.

Claim Rejections - 35 USC § 101

5. Claims 1-14 and 19-20 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. Specifically, claims 1-14 are directed to a method with no tangible output. Specifically, claims 19-20 are directed to functional descriptive material (software per se) with no tangible output. The independent claims 1-2, 10 and 19 appear to be lacking a tangible result. The result in these claims is a determination which has not been applied in a disclosed practical application, or at least made available for use in a disclosed practical application. Similarly, the final result achieved of claim 1 is generating data. However, the term generating has multiple meanings, including "to formulate" and "to bring into existence". In the context claimed, it appears that the abstract definition "to formulate" applies in the current case such that the claims do not produce a tangible result.

Claim Rejections - 35 USC § 102

6. **Claim 1-14 and 19-20 are rejected** under 35 U.S.C. 102(a) as being clearly anticipated by **Optimal Technologies ("Operations Review of June 14, 2000 PG&E Bay Area System Events Using Aempfast Software").**

As per claim 1, Optimal is directed to a method for simulating an electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: *determining a model of the transmission-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *determining a model of the distribution-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses* **(page 13, Section 3, 5th paragraph)**; and simulating an operation of the electric power network with the single mathematical model **(page 13, Section 3, 5th paragraph)**; *and generating data describing the simulated electric power network* **(page 21, Section 8)**.

As per claim 2, Optimal is directed to a method for analyzing an electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: *determining a model of the transmission-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *determining a model of the distribution-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses* **(page 13, Section 3, 5th paragraph)**; simulating an operation of the electric

power network with the single mathematical model **(page 13, Section 3, 5th paragraph)**; assessing under load flow analysis *at least one of a* condition and performance of the simulated electric power network **(page 13, Section 3, 1st paragraph)** *and generating data describing at least one of the condition and the performance of the simulated electric power network* **(page 21, Section 8)**.

As per claim 3, Optimal is directed to the method of claim 2, further comprising: integrating models of theoretical distribution-level real and reactive energy sources connected to one or more of the plurality of distribution-level buses into the single mathematical model **(page 13, Section 3, 1st paragraph)**; and observing impacts and effects across the simulated electric power network of the theoretical distribution-level real and reactive energy sources connected on one or more of the plurality of distribution-level buses **(page 13, Section 3, 2nd paragraph)**.

As per claim 4, Optimal is directed to the method of claim 2, further comprising: integrating models of theoretical alternative topologies of the distribution-level portion of the electrical power network into the single mathematical model **(page 13, Section 3, 5th paragraph)**; and observing impacts and effects across the simulated electrical power network of the alternative topologies of distribution-level portions of the network **(page 13, Section 3, 5th paragraph)**.

As per claim 5, Optimal is directed to the method of claim 2, further comprising: integrating additional models of theoretical distribution-level loads into the single mathematical model **(page 13, Section 3, 5th paragraph)**; and observing impacts and effects of load growth across the simulated electrical power network due to the addition of theoretical distribution-level loads **(page 13, Section 3, 5th paragraph)**.

As per claim 6, Optimal is directed to the method of claim 2, further comprising: integrating models of theoretical transmission-level real and reactive energy sources connected to one or more of the plurality of transmission-level buses into the single mathematical model **(page 13, Section 3, 1st and 5th paragraph)**; and observing impacts and effects across the simulated electric power network of the

theoretical transmission-level real and reactive energy sources connected on one or more of the plurality of transmission-level buses **(page 13, Section 3, 5th paragraph).**

As per claim 7, Optimal is directed to the method of claim 2, further comprising: integrating models of theoretical alternative topologies of the transmission-level portions of the electrical power network into the single mathematical model **(page 13, Section 3, 5th paragraph)**; and observing impacts and effects across the simulated electrical power network of the alternative topologies of transmission-level portions of the network **(page 13, Section 3, 5th paragraph).**

As per claim 8, Optimal is directed to the method of claim 2, further comprising: integrating additional models of theoretical transmission-level loads into the single mathematical model **(page 13, Section 3, 5th paragraph)**; and observing impacts and effects of load growth across the simulated electrical power network due to the addition of theoretical transmission-level loads **(page 13, Section 3, 5th paragraph and page 14, 2nd paragraph).**

As per claim 9, Optimal is directed to the method of claim 2, wherein the integrating models further comprises: representing actual distribution-level buses and elements having an actual voltage and an actual topology with corresponding models of buses and elements characterized, at least in part, by representations of the actual voltages and the actual topologies of the distribution-level buses and elements **(page 13, Section 3, 2nd paragraph).**

As per claim 10, Optimal is directed to a method for analyzing performance of a modeled electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: *determining a model of the transmission-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *determining a model of the distribution-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the*

distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses **(page 13, Section 3, 5th paragraph)**; assessing by load flow analysis a condition and a performance of the modeled electric power network **(page 15, Section 4.1.1)**; adding incremental real and reactive energy sources in locations of the modeled electric power network **(page 13, Section 3, 5th paragraph)**; assessing by load-flow analysis the condition and performance of the simulated electric power network with the added incremental real and reactive energy sources **(page 15, Section 4.1.1)**; determining whether the performance of the modeled electric power network is improved as a result of the added real and reactive energy sources **(page 16, Section 4.1.1)**; determining a set of added real and reactive energy sources that yields a greatest improvement in network performance **(page 13, Section 3, 5th paragraph)**; characterizing the set of added real and reactive energy sources as specific distributed energy resources **(page 13, Section 3, 5th paragraph)** *and generating data describing the set of added real and reactive energy resources* **(page 21, Section 8)**.

As per claim 11, Optimal is directed to the method of claim 10, further comprising, quantifying an improvement in performance of the modeled electric power network due to the set of added real and reactive energy sources **(page 13, Section 3, 5th paragraph)**.

As per claim 12, Optimal is directed to the method of claim 10, wherein adding incremental real and reactive energy sources further comprises: representing the energy sources with models of the energy sources characterized, at least in part, by values of corresponding electric power network actual bus location and actual voltage level **(page 13, Section 3, 2nd paragraph)**; adding to the mathematical model the models of the energy sources at one of the distribution-level buses and transmission-level buses, wherein the models of real energy sources are added subject to actual limits appropriate for dispatchable demand reductions available on the electric power network, and the real energy sources with reactive energy sources are added subject to actual limits appropriate for generation at load sites within the electric power network **(page 13, Section 3, 5th paragraph)**.

As per claim 13, Optimal is directed to the method of claim 10, wherein determining whether the performance of the modeled electric network is improved as a result of the addition of energy sources comprises: considering selected characteristics of a reduction of real power losses and reactive power losses, improvement in voltage profile, improvement in voltage stability, improvement of load-serving capability, and avoidance of additions of electric elements connected to the network that would otherwise be required **(page 19-20, Section 6.1.2 and Section 6.2)**.

As per claim 14, Optimal is directed to the method of claim 10, wherein characterizing the additions of real and reactive energy sources comprises: creating a plurality of mathematical models each having both distribution-level buses and connected electrical elements and transmission-level buses and connected electrical elements under a plurality of network operating conditions **(page 15, Section 4.1.1)**; determining the additions of models of real and reactive energy sources that achieve the greatest improvement in network performance of the modeled network under each set of operating conditions **(page 13, Section 3, 5th paragraph)**; characterizing each incremental addition of real or reactive energy sources as a discrete generation project, dispatchable demand response project, or capacitor bank project **(page 13, Section 3, 5th paragraph)**; and comparing results achieved under each set of operating conditions to derive model profiles for operation of each discrete added energy source model under each different set of operating conditions **(page 19-20, Section 6.1.2 and Section 6.2).**

As per claim 19, Optimal is directed to a computer readable medium comprising a computer program that when executed in a computer processor implements the steps of: *determining a model of the transmission-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *determining a model of the distribution-level buses and connected electrical elements* **(page 16, Section 4.2 and page 27, last paragraph)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the*

distribution-level buses **(page 13, Section 3, 5th paragraph)**; simulating an operation of the electric power network with the single mathematical model **(page 13, Section 3, 5th paragraph)**; assessing under load flow analysis *at least one of a* condition and performance of the simulated electric power network **(page 13, Section 3, 1st paragraph)** *and generating data describing at least one of the condition and the performance of the simulated electric power network* **(page 21, Section 8)**.

As per claim 20, Optimal is directed to the computer readable medium of claim 19, further comprising a computer program that when executed in a computer processor further implements the steps of: integrating models of theoretical distribution-level sources of real and reactive energy sources connected to one or more of the plurality of distribution-level buses into the single mathematical model **(page 13, Section 3, 1st paragraph)**; and calculating impacts and effects across the simulated electric power network of the theoretical distribution-level real and reactive energy sources connected on one or more the plurality of distribution-level buses **(page 13, Section 3, 2nd paragraph)**.

7. **Claim 1-2, 6, and 19 are rejected** under 35 U.S.C. 102(e) as being clearly anticipated by **Rehtanz et al. (U.S. Patent No. 7,096,175 B2), henceforth Rehtanz 75.**

As per claim 1, Rehtanz 75 is directed to a method for simulating an electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: *determining a model of the transmission-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65 – column 5, line 3)**; *determining a model of the distribution-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65 – column 5, line 3)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses* **(column 3, lines 11-27)**; and simulating an

operation of the electric power network with the single mathematical model **(column 4, lines 26-32)**; *and generating data describing the simulated electric power network* **(column 9, lines 9-14)**.

As per claim 2, Rehtanz 75 is directed to a method for analyzing an electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: *determining a model of the transmission-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65 – column 5, line 3)**; *determining a model of the distribution-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65 – column 5, line 3)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses* **(column 3, lines 11-27)**; simulating an operation of the electric power network with the single mathematical model **(column 4, lines 26-37)**; assessing under load flow analysis *at least one of a* condition and performance of the simulated electric power network **(column 4, lines 44-51)** *and generating data describing at least one of the condition and the performance of the simulated electric power network* **(column 9, lines 9-14)**.

As per claim 6, Rehtanz 75 is directed to the method of claim 2, further comprising: integrating models of theoretical transmission-level real and reactive energy sources connected to one or more of the plurality of transmission-level buses into the single mathematical model **(column 5, lines 42-48)**; and observing impacts and effects across the simulated electric power network of the theoretical transmission-level real and reactive energy sources connected on one or more of the plurality of transmission-level buses **(column 4, lines 33-37)**.

As per claim 19, Rehtanz 75 is directed to a computer readable medium comprising a computer program that when executed in a computer processor implements the steps of: *determining a model of the transmission-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65**

– **column 5, line 3)**; *determining a model of the distribution-level buses and connected electrical elements* **(column 3, lines 12-27 and column 4, line 65 – column 5, line 3)**; *generating a single mathematical model by integrating the model of the transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission level buses and the distribution-level buses* **(column 3, lines 11-27)**; simulating an operation of the electric power network with the single mathematical model **(column 4, lines 26-37)**; assessing under load flow analysis *at least one of a* condition and performance of the simulated electric power network **(column 4, lines 44-51)** *and generating data describing at least one of the condition and the performance of the simulated electric power network* **(column 9, lines 9-14)**.

Claim Rejections - 35 USC § 103

8. **Claims 3-5, 7-14, and 20** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rehtanz et al. (U.S. Patent No. 7,096,175 B2), henceforth Rehtanz 75 in view of Rehtanz et al. (U.S. Patent No. 6,885,915 B2), henceforth Rehtanz 15.**

As per claim 3, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose further comprising: integrating models of theoretical distribution-level real and reactive energy sources **(column 5, lines 42-48)** connected to one or more of the plurality of distribution-level buses into the single mathematical model; and observing impacts and effects across the simulated electric power network of the theoretical distribution-level real and reactive energy sources connected on one or more of the plurality of distribution-level buses.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to distribution-level buses **(column 9, lines 44-58)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary

person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 4, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose further comprising: integrating models of theoretical alternative topologies of the distribution-level portion of the electrical power network into the single mathematical model; and observing impacts and effects across the simulated electrical power network of the alternative topologies of distribution-level portions of the network.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to distribution-level buses **(column 9, lines 44-58)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 5, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose further comprising: integrating additional models of theoretical distribution-level loads into the single mathematical model; and observing impacts and effects of load growth across the simulated electrical power network due to the addition of theoretical distribution-level loads.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to distribution-level buses **(column 9, lines 44-58)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 7, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose further comprising: integrating models of theoretical alternative topologies of the transmission-level portions of the electrical power network into the single mathematical model; and observing impacts and effects across the simulated electrical power network of the alternative topologies of transmission-level portions of the network.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to transmission-level buses **(column 3, lines 39-47)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 8, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose further comprising: integrating additional models of theoretical transmission-level loads into the single mathematical model; and observing impacts and effects of load growth across the simulated electrical power network due to the addition of theoretical transmission-level loads.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to transmission-level buses **(column 3, lines 39-47)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 9, Rehtanz 75 is directed to the method of claim 2, but fails to specifically disclose wherein the integrating models further comprises: representing actual distribution-level buses and elements having an actual voltage **(column 5, lines 42-48)** and an actual topology with corresponding models of buses and elements characterized, at least in part, by representations of the actual voltages and the actual topologies of the distribution-level buses and elements.

Rehtanz 15 teaches representing actual distribution-level buses and elements having an actual voltage and actual topology and characterized by representation of said buses and elements **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy

sources in the model and observing the impacts and effects of the additions Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 10, Rehtanz 75 is directed to a method for analyzing performance of a modeled electric power network having a plurality of transmission-level buses and connected electrical elements and a plurality of distribution-level buses and connected electrical elements, the method comprising: integrating the distribution-level buses and connected electrical elements with the transmission-level buses and connected electrical elements into a single mathematical model **(column 3, lines 11-27)**; assessing by load flow analysis a condition and a performance of the modeled electric power network **(column 9, lines 21-30)**; but fails to specifically disclose adding incremental real and reactive energy sources in locations of the modeled electric power network; assessing by load-flow analysis the condition and performance of the simulated electric power network with the added incremental real and reactive energy sources; determining whether the performance of the modeled electric power network is improved as a result of the added real and reactive energy sources; determining a set of added real and reactive energy sources that yields a greatest improvement in network performance; and characterizing the set of added real and reactive energy sources as specific distributed energy resources **(column 5, lines 42-48)**.

Rehtanz 15 teaches adding incremental real and reactive energy sources **(column 9, lines 44-58)**, assessing the condition and performance of the network with added sources **(column 9, lines 59-67)**, determining whether the performance is improved **(column 5, lines 34-65)**, determining a set that yields a greatest improvement **(column 5, lines 34-65)**, and characterizing the set of sources as specific distributed energy resources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions of

Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43)**.

As per claim 11, the combination of Rehtanz 75 and Rehtanz 15 already discloses the method of claim 10, further comprising, quantifying an improvement in performance of the modeled electric power network due to the set of added real and reactive energy sources **(column 5, lines 42-49)**.

As per claim 12, the combination of Rehtanz 75 and Rehtanz 15 already discloses the method of claim 10, wherein adding incremental real and reactive energy sources further comprises: representing the energy sources with models of the energy sources characterized, at least in part, by values of corresponding electric power network actual bus location and actual voltage level **(Rehtanz 15, column 9, lines 59-67)**; adding to the mathematical model the models of the energy sources at one of the distribution-level buses and transmission-level buses, wherein the models of real energy sources are added subject to actual limits appropriate for dispatchable demand reductions available on the electric power network, and the real energy sources with reactive energy sources are added subject to actual limits appropriate for generation at load sites within the electric power network **(Rehtanz 15, column 9, lines 59-67)**.

As per claim 13, the combination of Rehtanz 75 and Rehtanz 15 already discloses the method of claim 10, wherein determining whether the performance of the modeled electric network is improved as a result of the addition of energy sources comprises: considering selected characteristics of a reduction of real power losses and reactive power losses, improvement in voltage profile, improvement in voltage stability, improvement of load-serving capability, and avoidance of additions of electric elements connected to the network that would otherwise be required **(Rehtanz 75, column 4, lines 26-33)**.

As per claim 14, the combination of Rehtanz 75 and Rehtanz 15 already discloses the method of claim 10, wherein characterizing the additions of real and reactive energy sources comprises: creating a plurality of mathematical models each having both distribution-level buses and connected electrical

elements and transmission-level buses and connected electrical elements under a plurality of network operating conditions **(Rehtanz 75, column 3, lines 11-27 and column 4, lines 26-32)**; determining the additions of models of real and reactive energy sources that achieve the greatest improvement in network performance of the modeled network under each set of operating conditions **(Rehtanz 15, column 5, lines 34-65)**; characterizing each incremental addition of real or reactive energy sources as a discrete generation project, dispatchable demand response project, or capacitor bank project **(Rehtanz 15, column 3, lines 2-7)**; and comparing results achieved under each set of operating conditions to derive model profiles for operation of each discrete added energy source model under each different set of operating conditions **(Rehtanz 15, column 5, lines 34-65)**

As per claim 20, Rehtanz 75 is directed to the computer readable medium of claim 19, but fails to specifically disclose further comprising a computer program that when executed in a computer processor further implements the steps of: integrating models of theoretical distribution-level sources of real and reactive energy sources connected to one or more of the plurality of distribution-level buses into the single mathematical model; and calculating impacts and effects across the simulated electric power network of the theoretical distribution-level real and reactive energy sources connected on one or more the plurality of distribution-level buses.

Rehtanz 15 teaches integrating distribution-level real and reactive energy sources connected to distribution-level buses **(column 9, lines 44-58)** and observing impacts and effects of the sources **(column 9, lines 59-67)**. Rehtanz 75 and Rehtanz 15 are analogous art because they are both from the same field of endeavor, simulating an electric power network. It would have been obvious to an ordinary person skilled in the art at the time of the invention to combine the method of simulating an electric power network of Rehtanz 75 with the method of modeling and adding in distribution-level and transmission-level energy sources in the model and observing the impacts and effects of the additions

Rehtanz 15 in order to cover all possible combinations of an electric power network **(Rehtanz 15, column 9, lines 40-43).**

Response to Arguments

9. Applicant's arguments filed 01/11/07 have been fully considered but they are not persuasive.

10. The claim objections have been withdrawn.

11. The 101 rejections are maintained. Generated data can remain in the abstract with no real world output. Examiner recommends that the claims be directed towards "outputting" data describing a simulated network instead of "generating" data.

12. The 102 and 103 rejections are maintained.

In response to Applicant's argument that Optimal technologies does not disclose "generating a single mathematical model by integrating the model of transmission-level buses with the model of the distribution-level buses, wherein the single mathematical model further models the interdependency of the transmission-level buses and the distribution level-buses", the Applicants are directed to page 13, where in order to optimize a power network, determinations are made such as "proper ranking of possible additions to system resources" including transmission and distribution lines based on "contribution to system stability and power flow" as the interdependency of the transmission and distribution lines are modeled. Furthermore, there is no limitation that the model of the transmission lines is substantially different from the model of distribution lines.

Applicant's argument that Optimal technologies does not disclose limitations in dependent claims 3-9, 11-14 and 20 are mere allegation without any supporting evidence.

In response to Applicant's argument that Rehtanz et al. '175 does not disclose "modeling the interdependency of the transmission-level buses and the distribution level-buses", while Rehtanz approximates the distribution network as a single element, it still models the dependency between the

transmission-level buses and the single element, thus fully anticipating the aforementioned limitation **(column 4, lines 26-32)**.

As Rehatanz et al. '175 still fully anticipates the parent claims, the 103 rejections of claims 3-5, 7-14, and 20 are maintained. Furthermore, Applicant's argument that Rehtanz '175 and '915 do not disclose limitations in dependent claims 2-9, 11-14, and 20 are mere allegation without any supporting evidence.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. The prior art made of record is not relied upon because it is cumulative to the applied rejection. These references include:

1. "Scalable Multi-Agent System for Real-Time Electric Power Management" published by Tolbert et al. in 2001.

2. "Load Following Functions Using Distributed Energy Resources" published by Li et al. in 2000.

3. U.S. Patent No. 6,549,880 B1 issued to Willoughby et al. on 04/15/03.

14. All Claims are rejected.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Suzanne Lo whose telephone number is (571)272-5876. The examiner can normally be reached on M-F, 8-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamini Shah can be reached on (571)272-2297. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Suzanne Lo
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Art Unit 2128

SL
03/10/07

KAMINI SHAH
SUPERVISORY PATENT EXAMINER